

a deceleration stage positioned downstream of said analyzer for decelerating said ion beam from said first transport energy to a final energy lower than said first transport energy;

A¹
a beam filter comprising a magnet positioned downstream of said deceleration stage for separating neutral particles from said ion beam; and

a target site for supporting a target for ion implantation, wherein said ion beam is transported through said beam filter and is delivered to said target site at said final energy.

15. (As Amended) An ion implanter comprising:

A²
an ion source for generating an ion beam at a first voltage V_0 ;
an analyzer for separating unwanted components from said ion beam;
a first beam transport device for transporting said ion beam through said analyzer at a first transport energy;

a first deceleration stage positioned downstream of said analyzer for decelerating said ion beam from said first transport energy to a second transport energy less than said first transport energy;

a beam filter positioned downstream of said first deceleration stage for separating neutral particles from said ion beam;

a second beam transport device for transporting said ion beam through said beam filter at said second transport energy;

a second deceleration stage positioned downstream of said beam filter for decelerating said ion beam from said second transport energy to a final energy less than said second transport energy; and

a target site for supporting a target for ion implantation, wherein said ion beam is delivered to said target site at said final energy.

30. (As Amended) A method for implanting ions in a target, comprising the steps of:

A³
generating an ion beam at a first voltage V_0 ;

separating unwanted components from said ion beam in an analyzer;

transporting said ion beam through said analyzer at a first transport energy;

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decelerating said ion beam from said first transport energy to a final energy lower than said first transport energy downstream of said analyzer;

separating neutral particles from said ion beam in a beam filter comprising a magnet, after decelerating said ion beam from said first transport energy to said final energy; and

delivering said ion beam to a target site at said final energy.

37. (As Amended) A method for implanting ions in a target, comprising the steps of:

A4

generating an ion beam at a first voltage V_0 ;

separating unwanted components from said ion beam in an analyzer;

transporting said ion beam through said analyzer at a first transport energy;

decelerating said ion beam from said first transport energy to a second transport energy less than said first transport energy in a first deceleration stage positioned downstream of said analyzer;

separating neutral particles from said ion beam in a beam filter positioned downstream of said first deceleration stage;

transporting said ion beam through said beam filter at said second transport energy;

decelerating said ion beam from said second transport energy to a final energy less than said second transport energy in a second deceleration stage positioned downstream of said beam filter; and

delivering said ion beam to a target site at said final energy.

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45. (As Amended) An ion implanter comprising:

an ion source for generating an ion beam and accelerating said ion beam at a first voltage V_0 ;

a beamline module containing one or more beamline components for modifying said ion beam;

means for transporting said ion beam through said beamline module at a first transport energy;

a beam filter positioned downstream of said beamline module for separating neutral particles from said ion beam;

A5
a deceleration stage disposed between said beamline module and said beam filter for decelerating said ion beam from said second transport energy to a final energy less than said first transport energy; and

a target site for mounting a target for ion implantation, wherein said ion beam is transported through said beam filter and is delivered to said target site at said final energy.

52. (As Amended) An ion implanter comprising:

an ion source for generating an ion beam and accelerating said ion beam at a first voltage V_0 ;

an analyzer for separating unwanted components from said ion beam;

A4
a first beamline module containing one or more beamline components for modifying said ion beam;

first means for transporting said ion beam through said first beamline module at a first transport energy;

a second beamline module positioned downstream of said first beamline module, said second beamline module comprising a beam filter for separating neutral particles from said ion beam;

a first deceleration stage disposed between said first and second beamline modules for decelerating said ion beam from said first transport energy to a second transport energy less than said first transport energy;

second means for transporting said ion beam through said second beamline module at said second transport energy;

a target site positioned downstream of said second beamline module for mounting a target for ion implantation; and

a second deceleration stage disposed between said second beamline module and said target site for decelerating said ion beam from said second

A b

transport energy to a final energy less than said second transport energy, wherein
said ion beam is delivered to the target site at said final energy.
